REMARKS

This responds to the Office Action mailed on July 16, 2008, and the Advisory Action mailed October 20, 2008.

Claims 24 and 25 have been added in this response. As a result, claims 1-25 are now pending in this application. However, claims 1, 11, 21, 22 and 23 are withdrawn from consideration by the Examiner as a result of the restriction requirement. Accordingly, claims 2-10, 12-20 and 24-25 are now under examination.

§102 Rejection of the Claims

Claims 2-10 and 12-20 have been rejected under 35 U.S.C. § 102(e) as allegedly anticipated by O'Keefe (US 2002/0004204 A1) in light of Berlien et al. (US 5,850,195). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *M.P.E.P § 2131.* To anticipate a claim, a reference must disclose every element of the challenged claim and enable one skilled in the art to make the anticipating subject matter. *PPG Industries, Inc. V. Guardian Industries Corp.*, 75 F.3d 1558, 37 USPQ2d 1618 (Fed. Cir. 1996). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). Applicant respectfully submits that the Office Action did not make out a *prima facie* case of anticipation because the claims contain multiple elements not found in O'Keefe.

For example, independent claim 2 recites "creating at least one stream of binary data carried by electrical, molecular or light signals" and further recites transferring the at least one stream of binary data and "receiving the streams of binary data carried by electrical, molecular or light signals transferred through the substrate." Claim 12 is a

means plus function claim reciting similar subject matter. The Advisory Action asserts that O'Keefe teaches binary data in light signals, stating:

> O'Keefe teaches extracting binary data from his light signals (page 10, paragraph 0106-0107). In order to extract binary data from his signals, his signals must be carrying binary data. The instant claims recite "creating at least one stream of binary data carried by electrical, molecular, or light signals." Thus, O'Keefe appears to have created signals with binary data, because he is able to extract such data from the signals. (emphasis added)

Applicant respectfully disagrees with this interpretation of O'Keefe. O'Keefe does not teach "extracting" any binary signals. In fact, O'Keefe does not use the term "extract" at paragraphs 0106-0107 or at any other point in the specification. Rather, O'Keefe states that "converting a signal emitted from a photodiode into a digital signal are known in the art." Thus O'Keefe is converting a signal to a different form; it is not extracting information that was present before the conversion as stated in the Advisory Action. The difference is significant. In Applicant's claims 2 and 12, the binary data stream is altered as it passes through the substrate. Applicant's claimed methods and systems make use of this alteration, reciting "decoding the identity of an examined molecule or group of molecules interacting with the substrate according to the alteration of the stream of binary data carried by electrical, molecular or light signals obtained during the transmission of the at least one stream of binary data carried by electrical, molecular or light signals through the substrate."

The conversion of a digital signal to an analog signal always involves a certain amount of error. For example, quantization error is intrinsic to any analog to digital conversion and results in alteration of the signal. Further, it is common for other errors to be introduced during an analog to digital conversion. These errors may be the result of non-linearity of the converter and aperture error due to clock jitter. As a result, the conversion of an analog signal to a digital signal always introduces a certain degree of error in the information in the signal, thus the digital signal information is altered from the source analog signal. The analog to digital conversion disclosed in O'Keefe would render the method recited in claim 2 useless because two forms of alteration would be

present, one alteration as the signal passes through the substrate, and a further alteration resulting from the analog to digital conversion. This second alteration would destroy the operability of the system, because the system relies on the ability to decode an identity based on the alteration of a binary data stream after it has passed through the substrate. The second alteration due to the analog to digital conversion would make it impossible to detect if the alteration in the binary signal was due to alteration as the signal passed through the substrate or if the alteration was due to the analog to digital conversion. Thus it is clear that decoding an identity of an examined molecule or group of molecules interacting with the substrate according to the alteration of the stream of binary data is vastly different from analyzing changes in an analog signal after it has passed through a substance.

Additionally, the Berlien disclosure does not satisfy any deficiency of the O'Keefe reference or teach any element relevant to the present invention. Instead, Berlien is limited to disclosure of a light-to-digital signal converter. While such a converter may be used by O'Keefe to convert a signal that has already passed through the substrate into a digital signal, such a step is not part of the claimed invention. As discussed above, the conversion of an analog signal to a digital signal is different from the methods and systems recited in claims 2 and 12. The conversion disclosed in Berlien results in the problems discussed above, and such a conversion is therefore different from the systems and methods recited in the claimed invention. Hence, the Berlien reference is irrelevant.

Claims 3-10 depend from claim 2 and claims 13-20 depend from 12. Each of these dependent claims are therefore allowable for at least the same reasons as discussed above regarding their respective base claims 2 and 12.

In view of the above, Applicant submits that claims 2-10 and 12-20 are novel and distinct over O'Keefe (US 2002/0004204 A1) in light of Berlien et al (US 5850195) and respectfully requests withdrawal of this rejection under 35 U.S.C. § 102(e).

New Claims 24-25

Claims 24 and 25 have been added in this response. Support for new claims 24 and 25 may be found throughout the specification and at least at paragraphs 0022 and 0040 of the specification. Applicant respectfully submits that no new matter has been introduced in new claims 24 and 25. Claims 24 and 25 depend from claims 2 and 12 respectively, and are allowable for at least the reasons discussed above regarding claims 2 and 12. Claims 24 and 25 are further allowable because O'Keefe does not disclose that binary data on the substrate is altered.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Rodney L. Lacy (612-373-6954), to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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